

III.—THE SUBMERGENCE OF IS, IN WESTERN BRITTANY.

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IT has frequently been found that in cases of depression or elevation of land the records of historians have corroborated the inferences of geologists. The works of the ancient geographers have also been of use in this way. It is, however, more rarely that a tradition receives confirmation at the hands of geological observers, and this it is which leads me to call the attention of the readers of the *GEOLOGICAL MAGAZINE* to the subject of the present paper.

The tradition to which I wish to refer is one which has for many centuries been current in Lower Brittany, and the substance of it is this: that in the time of King Gradlon, that is, in the fourth or fifth century, the chief town of his kingdom was situated far to the West of the present land where is now the Bay of Douarnenez; that the land on which it stood was very low, and in constant danger from inroads of the sea, which was kept out by what the ballads on the subject call "gates," but which may have been some kind of dykes. The name of this town was Is, and it was the seat of the king's government. The legend then tells how, by a romantic series of events, the town and the surrounding low-lying land were submerged, the king only saving himself at the expense of his daughter Dahu, whom he flung into the sea from the pillion on which she was escaping with him.

Now there are a number of circumstances which tend to give this legend more weight than such tales usually deserve. Most of these arguments in favour of the existence of Is are stated at length in the *Chronicles of the Ligue in Brittany*, by Chanoine Moreau, who wrote about the beginning of the seventeenth century. The principal among them are as valuable now as they were in the time of Moreau, and the utter absence of variation in the tradition as it was known to the Bretons then and as it is told and sung by them now, is some evidence to its original truth. The facts which are explicable only on the assumption of the existence of the town and land in question are chiefly these:—1. That several well-made roads, which are even now very easily traced across the country, run from various inland points (for the most part ancient shrines) in Brittany to the shores of the bay, and that these roads, which have at present no conceivable object, would, if prolonged, converge at a point within the bay, some miles from land. 2. That the Abbots of Landévenec (a large and rich abbey, founded by King Gradlon) were bound by the terms of their tenure to come and take formal possession at a rock on the beach at Pentrez, which is the point nearest to the supposed site of the lost town. This ceremony was continued until shortly before the great Revolution, and it was always understood that the Pentrez rock was used as a substitute for Is, which could no longer be reached. 3. That many of the villages and towns in the vicinity of the bay have the termination *is*, which is a point in the evidence to which I

cannot grant as much importance as Chanoine Moreau seems to attach to it. 4. That the church at Lanval on the coast (now in ruins) had the following saying attached to it: "that sixty scarlet cloaks (these were the big-wigs), without counting others, used to come from Is to mass at Lanval," and that a common saying was, "Is ne cavas par da Paris," "Since Is, nothing has been seen like Paris." This last I have myself heard the natives say repeatedly.

These data, therefore, all point to the existence of Is, and to the general truth of the legend, and can scarcely be explained otherwise. If there did exist such a town in such a situation, then there must have been a considerable depression of the coast of Western Brittany at least in early Christian times, and traces of such an occurrence should be discernible somewhere along the coast. With the view of ascertaining whether this was the case or not, I, during one of my later sojourns in the district, carefully explored the whole of the Western coast of the department of Finistère. The result is, I think, quite in accordance with the tradition, and renders it at once possible and probable.



SKETCH-MAP OF PART OF COAST OF FINISTÈRE.

The dotted line shows the approximate coast-line in the time of Is.

On the shores of the bay itself, and in the Rade de Brest, no signs of any comparatively recent subsidence were observed. On doubling the Bec-ar-Raz, however, and following the coast in a Southerly direction, past the beautiful stretch of beach which skirts the broad Bay d'Audierne, the ruined churches and other buildings of the sacked towns of Penmarch and Kérity afford some evidence of being nearer the sea than they originally were, or, in other and more proper words, of the sea having gradually encroached

upon the land; one of the churchyards being already half eaten away by the waves of high tides, and displaying a by no means pleasing collection of bones below high-water mark. Moreover, it is asserted by sailors that the weird rock to the west of the ruins, well known as the *Torche de Penmarch*, is decreasing in height, and is no longer as excellent a land-mark as it was in former years. Proceeding westward from this point, we soon come to the Anse de Benodet, where, on the shores of the Ile Tudy, I was fortunate enough to discover two lines of boundary mounds, or stone dykes, which were continued some distance below low-water mark, thus plainly proving a subsidence of this low-lying shore at no very distant date. It is, however, further west still that the best and clearest proofs of depression are to be found, in the Bay de la Forêt, the very name of which should cause geological ears to prick up. This bay is small, the shores consisting of low-rounded rocks of very coarse-grained granite. It is two-thirds of a circle in shape, and is much used for oyster culture. It is shallow, the bottom being everywhere a mass of coralline. In dredging, however, for annelids, etc., I often brought up nuts and bits of wood, black and soft, as they are found in peat-bogs. During very low tides the shelving beach is seen to be studded very thickly with similarly blackened and decomposed trunks of trees (mostly oak and birch) apparently embedded in a layer of peaty mud full of nuts and leaves. In order to see these trunks, much clearing of the overlying sand is generally required, but their presence is so well known to the fishermen of the coasts, that it is always given by them as the origin of the name of the bay. That we have here a sunken forest there can be no doubt, and that the date of its submergence is by no means ancient (geologically speaking), is proved by the fact that on the western side of the bay the old wood is continuous with a living one on land at a place called Kerafloch. Besides this direct proof of submergence, I have it on the authority of a French naval officer, very familiar with the Brittany coast, that the Iles de Glénan (some eight miles to the south of the Bay de la Forêt) are in the modern charts sensibly smaller than they are drawn in the older maps. This is to some degree corroborated by the Ormer (*Haliotis*) fishers, who assured me that at the present day the Ormers are found much nearer the lighthouse on Penfret Island (one of the Glénan group) than they were formerly.¹ These two statements argue a rather rapid encroachment of the sea upon the land, and one which, when viewed in connexion with the other data furnished by the coast of the main-land, must in all probability have been continuing for a very considerable time. With such facts before us then, it is only necessary for our purpose to inquire whether the amount of depression displayed by them is sufficient to account for the submergence, fifteen centuries ago, of a portion of the present Bay of Douarnenez. In order to arrive at any results in this matter, the depth of the Bay of Douarnenez must of course be taken into ac-

¹ The Ormer can only be collected during very low tides, as its habitat is considerably below ordinary low-water mark.

count. Its bottom is a very gradually sloping one, tolerably deep at the western end or opening of the bay, and shallow at the eastern extremity. Now the eastern portion is the only one which we need consider, as it is within it that the site of *Is* is said, according to every version, to be. In this space then, the deepest sounding that I have been able to find is between seven and eight fathoms, so that an elevation to that extent would convert the whole of the eastern end of the bay into dry land. Now all the facts which we have detailed above, tend to show that the depression of the land is still at work, and assuming that it has continued ever since (how long before we need not inquire) the traditional date of the submergence of *Is*, we get an average rate of depression of three feet per century—by no means an extravagant allowance. The effect of the elevation of the land some forty-five feet would, it will be seen by referring to the accompanying sketch-map, not disturb the geographical descriptions of the district given by Cæsar and others. I wish it to be understood that I am in no wise arguing that the depression in question was anything more than a local one; as I am aware that it is held that the Northern, Southern, and South-western coasts of France are within the European area of elevation. That such a local sinking of the land exists in Basse Bretagne, I think I have shown sufficiently; and my object will be served if I have also shown that, at the time that *Is* is said to have been the pride of King Gradlon's kingdom, there is every probability that land did exist at the very spot with which that semi-mythical city has always been associated. That such a probability greatly enhances the value of the tradition, and of the otherwise slender evidence which supports it, is obvious. I have thus done my best as a geologist to bring back an old legend within the realms of truth, and I must now leave it to the antiquary to find out more concerning lost and forgotten *Is*.

IV.—ON THE DRIFTS OF THE WEST AND SOUTH BORDERS OF THE LAKE DISTRICT, AND ON THE THREE GREAT GRANITIC DISPERSIONS.

By D. MACKINTOSH, F.G.S.

(Continued from our last number, p. 256.)

Boulder-scars.—From Maryport to Parkgate, the E. coast of the Irish Sea at intervals exhibits accumulations or concentrations of large boulders, which are locally called scars. They may be seen in all stages of formation, from the denudational area, where they are in course of being left by the washing away of the clayey matrix, to the depositional area, where they have become half-covered with recent sand and shingle. In many places (as between Seascale and near Silcroft) there are so many boulders within a small area as to show that a considerable thickness of the clay must have been removed. With the exception of having tumbled down as the cliffs were undermined and worn back by the sea, many of the boulders may still rest nearly in the positions they occupied in the clay, but